Acquisition of dialectal features in a second language: The case of the Castilian Spanish voiceless interdental fricative

Research Thesis

Presented in partial fulfillment of the requirements for graduation *with research distinction* in Hispanic Linguistics in the undergraduate colleges of The Ohio State University

by

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1.0 Introduction

As learners begin to study a language that is not their mother tongue, they encounter many different levels of acquisition, including acquisition of lexical, syntactic, and phonetic/ phonological elements. One area of second language (L2) learning, specifically L2 Spanish, that allows for further study and discussion in the field of Second Language Acquisition is how L2 Spanish learners deal with dialectal variance in phonetics and phonology, especially when certain dialects present unique phonological features that have a close association with the geographic location and culture. This study explores how L1 (first language) English speakers learning Spanish as an L2 acquire the voiceless interdental fricative /θ/ that occurs contrastively only in the Castilian dialect of Spanish, as L2 speakers usually encounter this sound for the first time systematically when they study or live abroad. In the United States, students usually learn a Latin American dialect of Spanish that does not have this sound in their phonemic inventory. More specifically, the current study explores how the use of this sound develops in L2 learners of Spanish who are spending/ have spent time in Spain and aims at elucidating what factors contribute to the use (or not) of this sound by the learners. The study contains a sociolinguistic component as well, since L2 language attitudes towards this sound are considered as a possible factor in the acquisition process.

1.1 Background

Looking at a map of the Iberian Peninsula in Figure 1 found on a webpage describing a Spanish dialectal feature called *ceceo*, we can divide Spain into two broad dialectal zones: central/ northern Spain (where *el castellano* "Castilian Spanish" is spoken) and southern Spain (where el *andaluz* "Andalusian Spanish" is spoken). Focusing on the central and

northern regions, as previously mentioned Castilian Spanish possesses a unique phonological feature: the voiceless interdental fricative /θ/. Use of this sound is regulated and creates a phonemic contrast with the voiceless alveolar fricative /s/. In this dialect, /θ/ corresponds with the graphemes <ce, ci, z>, and /s/ is used with <s>, as seen below in Table 1. In other dialects of Spanish /θ/ is not part of their phonemic inventory, and /s/ corresponds with all of the previously listed graphemes. There are also dialects of Spanish where /θ/ corresponds with the previous graphemes and with /s/, a situation that is called *ceceo*. In the United States students begin the language learning process at around 11-12 years old depending on the school, and in Spanish classes students are generally exposed to Latin American varieties. Given that students do not usually encounter this sound until they study or live abroad in Spain for the first time, this creates questions surrounding the acquisition process of a feature so dialectally unique.

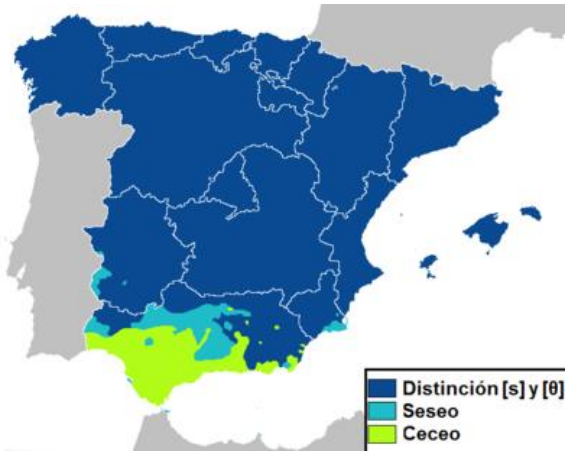

Fig 1. Map showing dialectal zones of Spain by use of /θ/

Phoneme	Grapheme	Spanish Examples
/θ/	<ce, ci, z>	**c**ebra “zebra” **c**ita “appointment” ca**z**ar “to hunt”
/s/	< s>	**s**ello “stamp” e**s**pañol “Spanish” ca**s**ar**s**e “to get married”

Table 1. Distribution of /θ/

1.2 Previous Studies

Some previous studies acknowledge the importance of L2 phonetic and phonological acquisition of dialectal features, including the acquisition of /θ/. Most of these studies target participants who are North American university students and had spent up to 3 months in Spain during a semester study abroad program. For instance, a study conducted by Stephanie Knouse (2012) collected data from a pool of two groups of L1 English speaking students: one group of 15 students studying abroad (SA) in Salamanca for 6-weeks, and another group of 10 students enrolled in an Intro to Hispanic Linguistics course during the summer of 2009 over a period of 6-weeks at a large university in the United States (AH). All of the participants, whether they were in the SA group or AH group, were given the same tasks once at the beginning of the study abroad program or course, and once at the end. In the pretest and posttest participants read a short newspaper article and were asked open-ended questions about their personal and academic interests in order to elicit spontaneous speech. Her findings suggest that after a 6-week period spent abroad in Spain, students in the SA group produce a minimal number of voiceless interdental fricatives (N= 36/ 2,119; 1.7%), while the AH group did not produce any (N= 0/1,357; 0%) (Knouse 2012). Knouse

considers linguistic, social, and stylistic factors as well, and finds that learners produce /θ/ more frequently in word-medial position according to the GoldVarb X analysis of linguistic factors, and the only linguistic factor selected as significant was the grapheme itself. She found some interesting phenomena associated with <z>. For example, learners produced /θ/ where <z> occurred with a probability of (0.79), and with the grapheme <z> participants produced the voiced alveolar fricative [z], which is expected, given that the grapheme <z> in English corresponds with /z/, and provides evidence for L1 American English interference. Additionally, Knouse noted that beginning and intermediate learners have a higher production rate of /θ/ than advanced learners, which contradicts the findings of Geeslin and Gudmestad (2008).

Additionally, Kathryn Ringer-Hilfinger's study done in 2012 focuses on 15 undergraduate students participating in a semester-long study abroad program in Madrid. Each participant was given a background survey with questions about their demographics, and their Spanish language learning background. Additionally, the participants were given a Matched-Guise Test, in which "all of the guises were bilingual Spanish- English speakers: a female Colombian, a male Puerto Rican, a male from Spain, a female from Spain, and one male and one female L2 speaker" (Ringer-Hilfinger, 2012). Along with the previous two tasks, there was also an informal interview and a language usage questionnaire, with questions about their motivation for learning Spanish, relationships with native speakers (NS), and social identity in the L2 community. Through oral and written tasks, Ringer-Hilfinger finds that "Although post–study abroad learners demonstrated high awareness of native speaker use of this dialect feature compared to pre–study abroad learners, this did not seem to determine

their use of [θ]" (Ringer-Hilfinger, 2012). Ringer-Hilfinger reports that /θ/ accounted for 2.9% of productions (N= 6/209; 2.9%). In terms of graphemic context, Ringer-Hilfinger finds that /θ/ was produced more with the grapheme <ci> (N= 4/6; 67%). This is different from what we see in Knouse 2012, in which the significant grapheme for production of /θ/ was <z>. There are also tokens where participants produced a voiced alveolar fricative [z], instead of where /s/ or /θ/ are expected. This is not surprising since the informants were all L1 American English speakers, and in English words with orthographic <z> are produced as [z], as mentioned earlier. This seems to be a case of interference from English (Ringer-Hilfinger, 2012). Turning next to the qualitative results of her study, Ringer-Hilfinger concludes that positive speaker attitudes reflected in the tasks did not result in higher production, which corroborates the findings of Geeslin & Gudmestad (2008).

A further study conducted by Angela George in 2014 focuses on the acquisition of /θ/ and the voiceless uvular fricative [χ] using the interlanguage variation model, which highlights three causes of acquisition: sociocultural factors, variation due to linguistic context, and time. Her data comes from a group of 25 L1 American English-speaking university students who spent 13 weeks studying abroad in Toledo, Spain. Tasks were given at three different timepoints: once at the beginning, middle, and end of the semester. These tasks consisted of a conversation with a native speaker (NS), and participants answered questions about personal and academic ventures in Spanish. Participants were also given a reading passage and read a list of words in isolation. Results from this study suggest that /θ/ occurs more frequently in the word list,

followed by the reading passage and finally the spontaneous conversation task. There were also more cases of overproduction in the word list and reading passage tasks.

Finally, Geeslin & Gudmestad (2008) focus on /θ/ and /-s/ weakening. Their study includes 130 university students, including both undergraduate and graduate students, who are all L1 American English speakers and L2 Spanish learners. These students had spent a range of time in different Spanish-speaking countries (11-24 months), and were separated into five separate groups by enrollment level. All participants were given a proficiency test, a background questionnaire, and a role play scenario that elicited spontaneous speech. Unlike Knouse (2012), Geeslin and Gudmestad found that although use of /θ/ was not widespread or consistent, use was highest among the most advanced students in Level 5. Out of five subjects that were placed in Level 5 (advanced), /θ/ was produced 129 out of 142 potential contexts for the target sound (N= 129/142; 90.0%). Therefore, they conclude that living abroad is not a necessary condition for incorporating the interdental sound into a learner's speech, nor is there a minimum length of stay in Spain necessary for acquiring this sound. Additionally, they conclude that a positive attitude does not result in a higher production rate.

From previous research we see that overall students studying abroad for up to 3 months did not increase their production rate of /θ/. However, unlike previous studies the current study considers L2 Spanish speakers who have spent 9 months or longer in Spain. Extending the time frame may give us a clue about what happens during the acquisition process beyond what has already been explored. Also, this study considers the effect of L2 linguistic attitudes towards /θ/, the Castilian dialect, and Spanish culture on production rate and acquisition.

1.3 Research Questions:

- Are there any linguistic factors that promote the production of the target sound by L2 learners of Spanish?
    - Factors explored include orthography, stress, syllable position, word position, and task.
- How does the amount of time one has spent in Spain affect the acquisition process of /θ/?
- What role do L2 sociolinguistic attitudes toward the target sound and target culture in general play in the acquisition process?

2.0 Methodology

2.1 Participants

Participants in the current study included two groups: Group A and Group B. Group A consisted of 4 native speakers of English (L2 Spanish learners) who had spent 8 weeks or less in Spain at the time of the study while participating in a study abroad program at *La Fundación José Gasset- Gregoria Marañon* in Toledo, Spain. As a former student at this institution, I worked with the staff and they graciously allowed me to return to their campus and interview the students participating in the *curso de verano* "summer term." All of the participants were between the ages of 18-25, and they were all currently attending a university in the United States. Group B consisted of 4 native speakers of English ranging from 23-65 years old who had spent time or lived in Spain for a range of 9 months up to 40 years at the time of the study. These participants were mostly found through the Facebook page for the program *auxiliaries de conversación*, which is a program created by the

Spanish Government that recruits foreigners to live in Spain while teaching English. Other participants in this group were acquaintances of my faculty mentor Dr. Rebeka Campos-Astorkiza. Combining both groups there were 8 participants total, including 6 females and 2 males that participated in the current study. Below in Table 2 there is more information about each participant. This study also included 4 native speakers of Castilian Spanish who conducted the interview with the participants during data collection. Native speaker participants were found either through Facebook, Dr. Campos- Astorkiza, or were new friends that I made during the data collection process in Spain. This allowed for consistency in the data collection process, as the researcher is not a native speaker of Spanish.

	Group	**Age**	**Occupation**	**Age at start of learning Spanish**	**Amount of time in Spain (at time of data collection)**	**Notes from interview**
CB	A	20	Student	13	2 weeks	-Thinks words sound smoother with /θ/ -Doesn't use /θ/ except with *gracias*
CM	A	20	Student	12-13	9 weeks	-Thinks Castilian Spanish is funny -Likes /θ/, hard to pronounce "I always say *gracias* now" (with /θ/)
MM	A	21	Student	15	9 weeks	-Thinks Castilian Spanish is beautiful -Doesn't think about using /θ/ -Doesn't use /θ/ except for with *gracias* or a sound at the end of the word
JA	A	22	Student	15	6 weeks	-Doesn't like /θ/ that much -Difficult to pronounce -Thinks Castilian Spanish accent is cool

DR	B	31	Study abroad coordinator	28	3.5 years	-/θ/ is hard to pronounce sometimes -Doesn't use /θ/ sometimes when speaking with someone from Mexico
TLP	B	22	English teacher	18	9 months	-Likes Castilian accent -Sometimes pays attention to pronunciation
MW	B	64	Retired	13	42 years	-Loves Castilian Spanish: "it's music for me" -Loves /θ/, comes naturally -Learned Spanish in Spain
KC	B	26	Linguist	13	4 years	-Likes Castilian Spanish dialect -Wanted to acquire /θ/ and the accent since starting to learn Spanish -Natural to use /θ/ -Helps distinguish certain words i.e. *cazar* ("to hunt) vs. *casar* ("to marry")

Table 2. Relevant participant information

2.2 Data Collection

Data collection was carried out during the summer of 2018 in either Toledo or Madrid Spain, depending on participant location. Each of the participants in Groups A and B participated in the same elicitation tasks that were recorded for analysis purposes. First, the participants were presented with 24 Spanish sentences in isolation during the reading task portion, with each sentence containing at least one word with the target sound in a variety of linguistic contexts. The native speaker of Spanish who helped facilitate the data collection process asked the participant to read each sentence aloud one-by-one. This reading task aimed at eliciting more careful speech.

Example sentences presented during the reading task include:

- Todos giramos la cabe**z**a para ver el espectáculo.
- Mi mamá me di**ce** que ella siempre tiene ra**z**ón.
- Todos los sábados la familia Gon**z**ále**z** va al **ce**ntro comer**ci**al.

- Hoy vamos a la catedral de Cádi**z**.
- Quiero explorar la **z**ona oeste del país.
- Tus **z**apatos son de alta calidad.
- Mucha**s** gra**ci**a**s** por venir a mi ca**s**a ayer, me ayuda**s**te mucho.
- Bar**ce**lona es la **ci**udad capital de Cataluña.
- Nuestra idea empe**z**ó con un con**ce**pto simple.
- En la clase de **ce**rámicas Ana me hi**z**o una ta**z**a muy bonita.
- Mi color favorito es a**z**ul.

Next, participants were presented with 10 photos of different foods and were asked by the native speaker to first say the name of the food and then provide a brief statement including whether they like the food in question or not, for what meal they would eat the food, or in what dishes they would use this food when cooking. Each food was picked specifically for its name, with all but two foods containing the target sound in its name. The foods presented were *manzana* (apple), *zanahorias* (carrots), *cebollas* (onions), *calabaza* (pumpkin), *arroz* (rice), *frijoles* (beans), *maíz* (corn), *nueces* (nuts), *patatas* (potatoes), *aceite de oliva* (olive oil). This task elicited a little bit more spontaneous speech so we could see if any differences in articulation arise between different types of speech. Example photos shown to participants:

*Man**z**anas* “apples”

***C**e**b**ollas* “onions”

*Calaba**z**a* “pumpkin”

The final part of the data collection process consisted of an interview conducted by a native speaker of Castilian Spanish with the participant. Questions asked during the interview aimed at gaining general information about the participant, information about their language-learning history and motivation, and their attitudes and opinions surrounding /θ/ and Spanish culture in general. More specifically, we aimed to find out if the participants identify with Spanish culture, including which aspects of Spanish culture they enjoy, and if they are aware of the target sound in their everyday surroundings. We asked the participant about their opinions of the sound, whether they use it at all in their own speech, and if there are specific situations in which they would use the sound or not. The complete list of interview questions can be found in Appendix 5.1.

During this interview the native speaker, the participant, and I sat at a public place such as a *cafeteria*, and the participant’s answers were recorded with a MacBook Pro laptop and an external microphone to help eliminate background noise as much as possible

2.3 Data Analysis

Data analysis was done both quantitatively and qualitatively. Beginning with the quantitative analysis, this was carried out using Praat software. We analyzed the recordings from all three tasks separately and each token, i.e. a /θ/ in Castilian Spanish, was

perceptually coded for its place of articulation and voicing (voiceless alveolar, voiced alveolar or interdental). All tokens of /s/ were also perceptually analyzed for any interdental productions in Pratt by looking at the spectrogram and listening to the sound files. Since /s/ is a more sibilant than /θ/, on a spectrogram the difference between these sounds is apparent so we were able to look at the /s/ tokens and identify whether they looked and sounded more like the interdental fricative. In addition, a subset of the /s/ tokens were also analyzed in this way for comparison purposes. After the initial perceptual and analysis, each token was coded according to the following relevant linguistic factors:

- Orthography (<ce, ci, z, s>)
- Task (reading sentences, photo description, oral interview)
- Stress (appears in stressed or unstressed syllable)
- Syllable position (onset or coda)
- Word position (initial, medial, final)
- Speaker
- Participant group (A or B)

Next, we looked at the effect of these variables on the type of production (interdental, voiceless alveolar, voiced alveolar) individually and also compared to other variables in a Microsoft Excel Spreadsheet, taking note of the relationships and interactions when comparing different combinations of the data in order to draw conclusions.

In terms of the qualitative analysis, the participant's responses to the interview questions regarding their L2 attitudes were interpreted according to their production data.

3.0 Results

3.1 Results by task

Looking specifically at the production data for each of the three tasks, we explore separately the quantitative results for each task and then considered the data from all the tasks together along with group differences. Analyzing and interpreting the data from the tasks separately allowed us to begin to notice patterns in the data.[1]1

3.2 Reading task results

Starting with the reading task, we created a series of graphs showing the different types of articulation by each of the relevant factors, i.e. orthography, stress, and word position. Overall, across both groups /θ/ was produced slightly more frequently with the grapheme <ci> (Figure 4), in a stressed syllable (Figure 5), in word-medial position (Figure 6), and in the onset of the syllable (Figure 7). First looking specifically at Figure 4, the graph below shows the effect of orthography on place of articulation for the reading task data. It is important to notice that an interdental production, represented by the gray bars, occurs more frequently with <ci> than with <z> or <ce>. Also, the orange bar represents voiced alveolar productions, [z], and this only occurs with <z> whereas with the other two graphemes there are only interdental and alveolar productions. This is expected because of L1 orthographic influence from English (Knouse, 2012).

[1] For the graphs included, the blue bars represent alveolar productions: *a*, the orange bars represent voiced alveolar productions: *a voiced*, and the gray bars represent interdental productions: *i*.

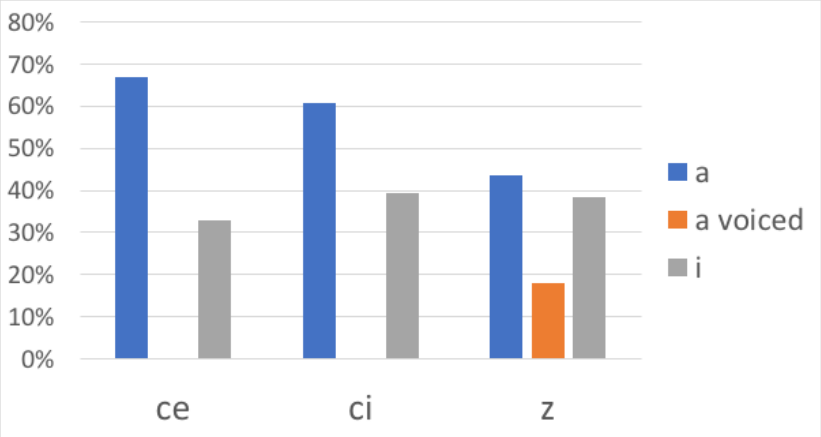

Fig 4. Place of articulation by orthography in reading task

Moving down to the next graph, Figure 5 shows which productions happen more frequently depending on word stress. There are many more alveolar productions overall for this task in both a stressed and unstressed syllable, but there are more interdental productions in a stressed syllable. There is also a slightly larger number of voiced alveolar fricatives in a stressed syllable as well.

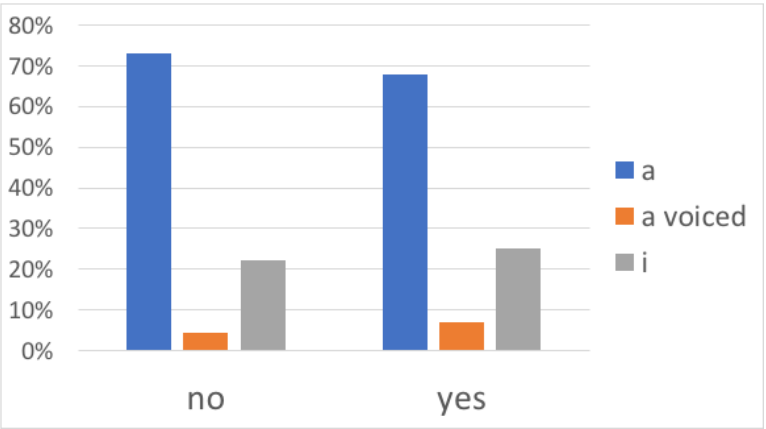

Fig 5. Place of articulation by stress in reading task

For word position in Figure 6 there are interdental productions in word-initial, medial, and final position, but the most productions occur in word-medial position. There is a

limited number of voiced alveolar fricatives produced in each word position as well, but not nearly as many as there are voiceless alveolar fricatives and interdentals.

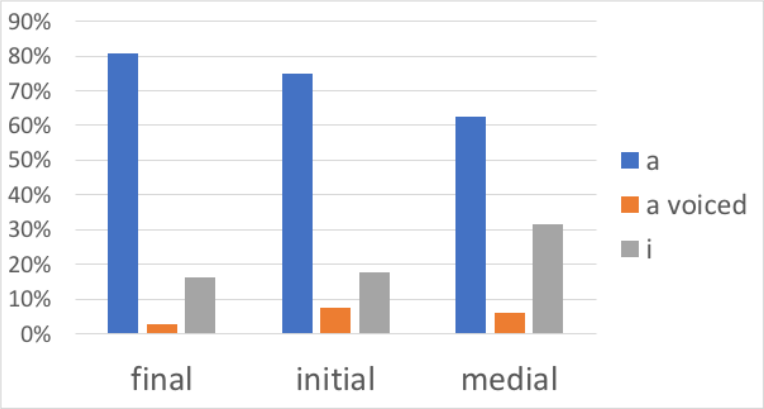

Fig 6. Place of articulation by word position in reading task

In Figure 7, which looks at place of articulation and syllable position, we see that /θ/ occurs more in the onset of the syllable, but there are still more alveolar than interdental productions. We also find more voiced alveolar productions in the onset of the syllable.

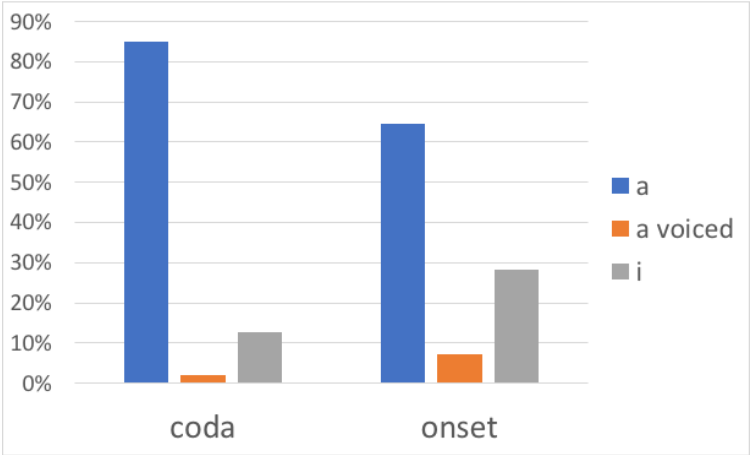

Fig 7. Place of articulation by syllable position

Other findings from the reading task suggest that although overall there were more interdentals produced in a stressed syllable and in the onset of the syllable for this task,

when we consider place of articulation with both stress and syllable position, we found that syllable position influences interdental production only in unstressed syllables (Figure 8).

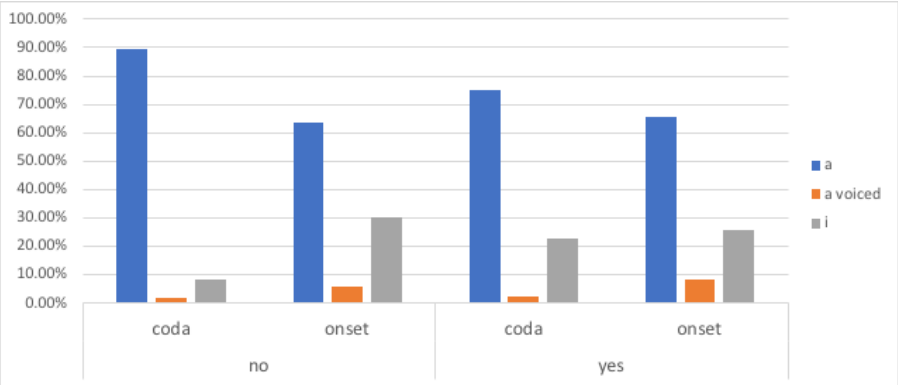

Fig 8. Place of articulation by stress and syllable position in reading task

3.3 Photo Description task results

Moving next to the results from the photo description task, we analyzed a series of graphs and found patterns when looking at the interactions between articulation and the same factors considered during the reading task. For the photo description task, we find that /θ/ had the highest production rate with the grapheme <z> (Figure 9), in a stressed syllable (Figure 10), in word-medial position (Figure 11), and in the onset of the syllable (Figure 12). In Figure 9 <z> has the most productions of /θ/, as indicated by the gray bar. It is interesting because in the photo description task there were more interdental productions of <ce> and more alveolar productions of <ci>, while in the reading task /θ/ occurred most often with <ci>. Similar to the reading task, there are only voiced alveolar productions with the grapheme <z>.

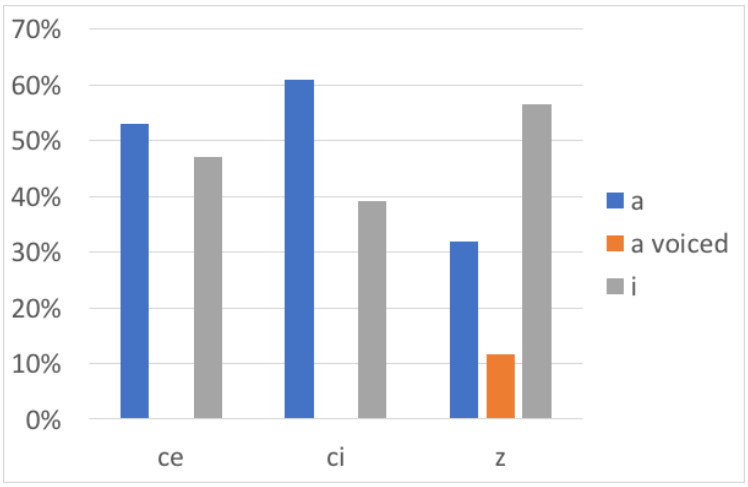

Fig 9. Place of articulation by orthography in photo description task

Furthermore, when looking at how stress affects articulation in Figure 10, there are also more interdentals produced in a stressed syllable, while there are more voiced alveolar fricatives produced in an unstressed syllable even though the difference is very small. The latter result is the opposite of the result from the reading task when looking at articulation and stress.

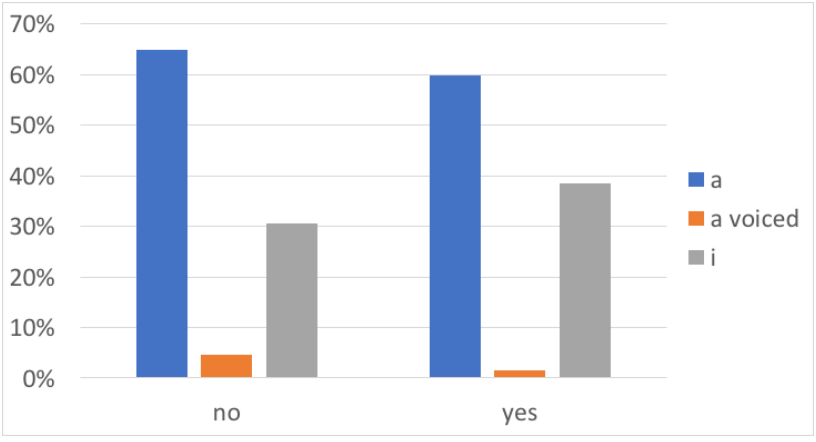

Fig 10. Place of articulation by stress in photo description task

Figure 11 shows the relationship between articulation and word position, and we find that there are more alveolars produced in word-final position, while there are more voiced alveolar productions in word- initial position and many more realizations of /θ/ in word-medial position.

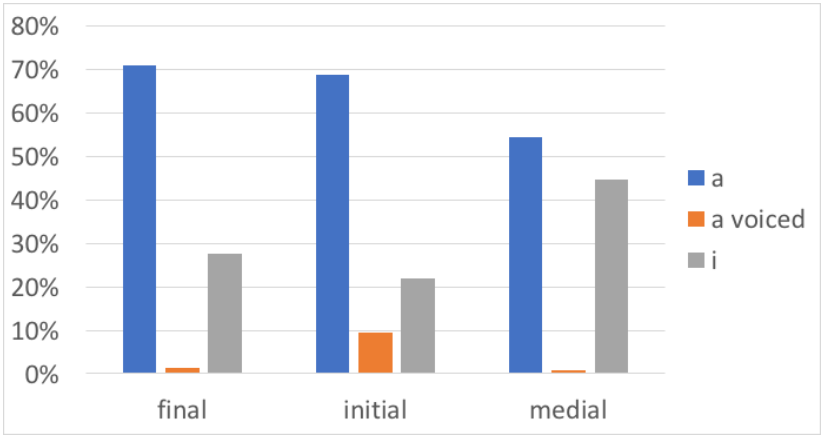

Fig 11. Place of articulation by word position in photo description task

Finally, for the photo description task the interdental and voiced alveolar occur more in the onset of the syllable as shown in Figure 12.

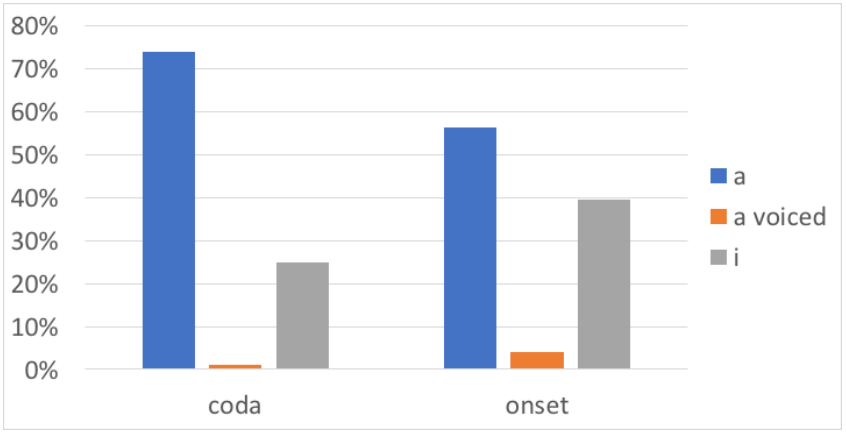

Fig 12. Place of articulation by syllable position in photo description task

3.4 Interview task results

Finally, for the interview task we received the same results as for the photo description task, where production of /θ/ was more frequent with the grapheme <z> (Figure 13), in a stressed syllable (Figure 14), in word-medial position (Figure 15), and in the onset of the syllable (Figure 16). In the interview task data, there are no voiced alveolar productions, so the graphs only compare alveolar versus interdental productions.

For graphemic context and place of articulation shown in Figure 13, /θ/ is produced more with the grapheme <z>, which follows the results obtained in the photo description task regarding effect of orthography on articulation. On the other hand, there were more alveolar productions with the grapheme <ci>.

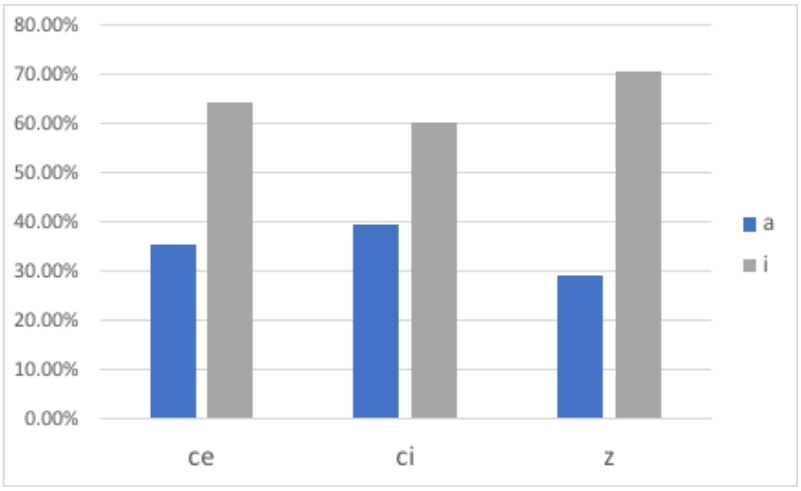

Fig 13. Place of articulation by orthography in interview task

For effect of stress we see that more interdentals occur in a stressed syllable, which agrees with the results from the other two tasks. In an unstressed syllable about the same number of alveolar and interdentals occur, as seen in Figure 14.

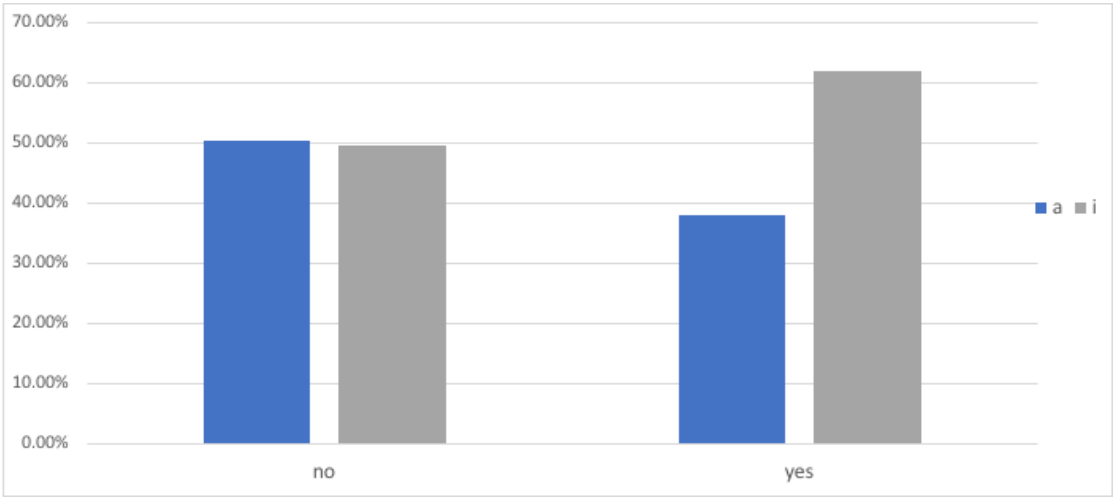

Fig 14. Place of articulation by stress in interview task

Just as in the reading and photo description tasks, Figure 15 shows how there are more interdentals produced in word-medial position, and there are more alveolar fricatives produced in word-initial position.

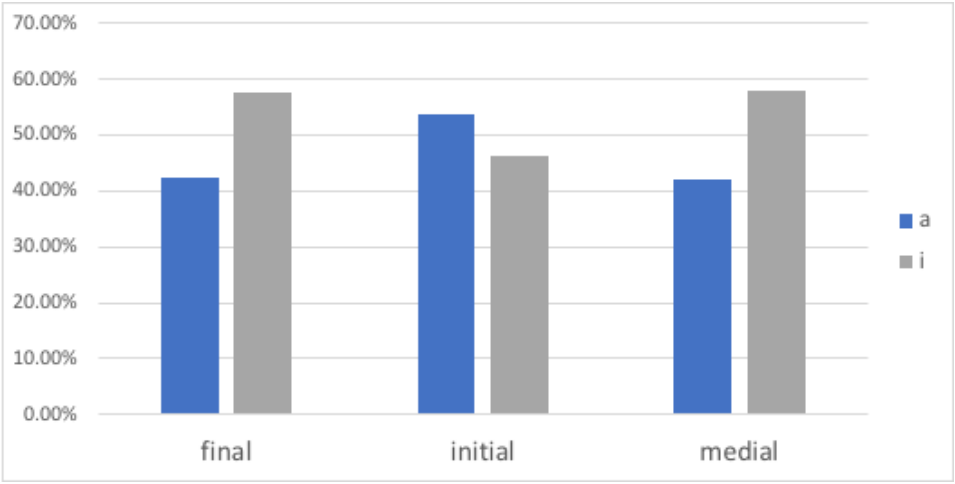

Fig 15. Place of articulation by word position in interview task

The results for syllable position also mirror what was found for the reading and photo description tasks, because with the gray bars Figure 16 reflects how /θ/ occurs more in the onset of the syllable.

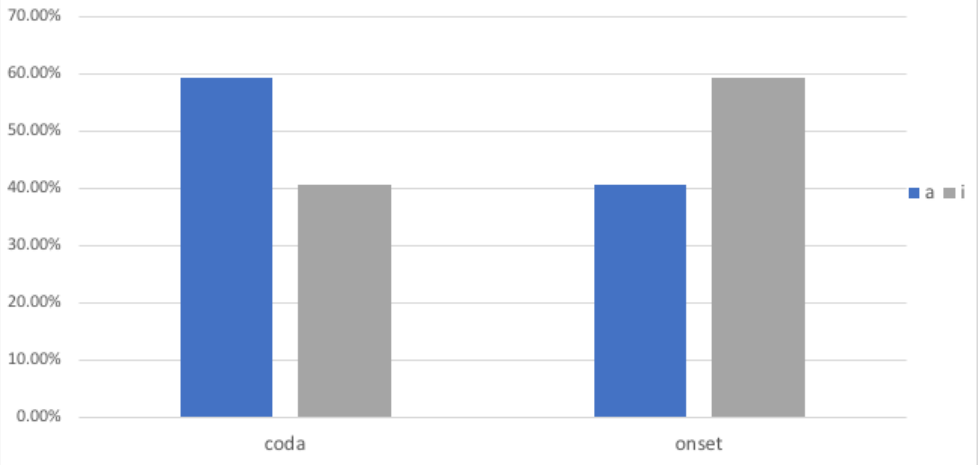

Fig 16. Place of articulation by syllable position in interview task

3.5 All task results and group differences

After analyzing all three tasks separately, we analyzed the data from the tasks combined and looked at group differences. The main findings were, as shown in Figure 17, that Group B produced more interdentals than Group A across all three tasks. Group B produced 61.61% of interdentals in total and Group A produced 14.63% interdentals. There was a higher production rate by both groups in the interview task followed by the photo description and reading task, which was the task that presents the lowest rate of interdental production for both groups. Figure 17 shows that both Group A and Group B produce the target sound more during the interview task, and that Group A produces many more alveolars that Group B. There are also some cases in which Group A produces a voiced alveolar during the photo description and reading task, while productions of the voiced alveolar only occur in the reading task for Group B.

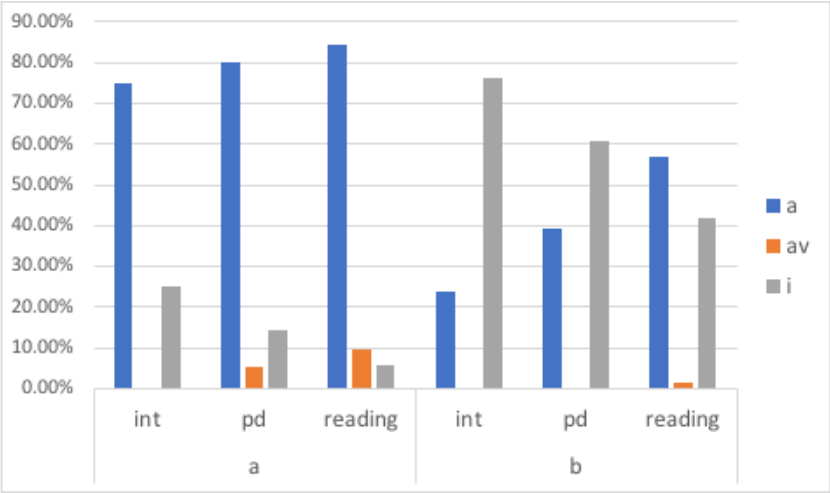

Fig 17. Place of articulation by group and task for all tasks

Also, there were some cases of over-production of /θ/ with the grapheme <s> as seen in Figure 18. As mentioned above in the methodology, tokens of /s/ were perceptually analyzed and coded for their voicing and place of articulation for comparison purposes. With this in mind, during the interview task a participant from Group A overproduced /θ/ with the grapheme <s>, a context in which an interdental would not occur in Castilian Spanish. Focusing on Group B, when considering all of the tasks the highest rate of /θ/ occurs with the grapheme <ci>, which corroborates the results on orthography in the reading task.

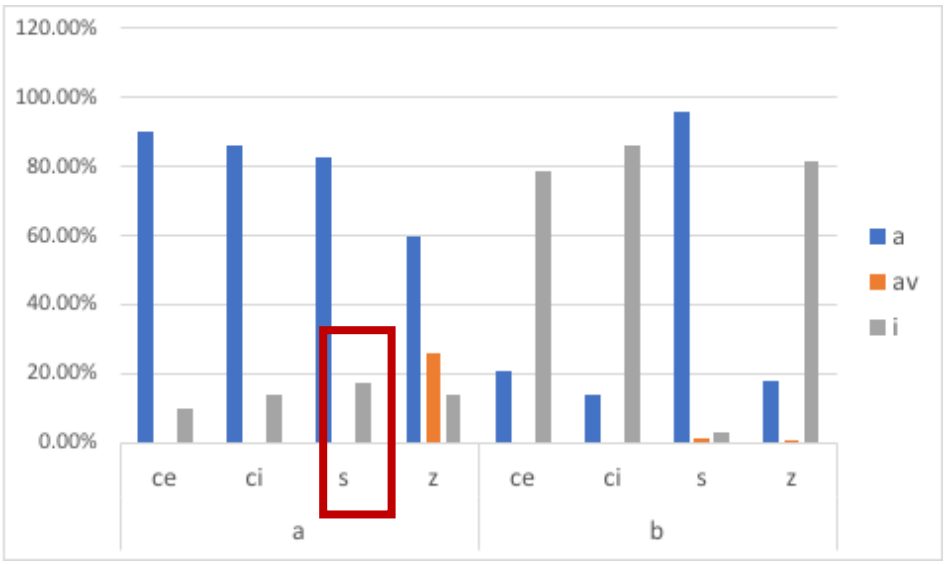

Fig 18. Place of articulation by group and orthography for all tasks

3.6 Qualitative Results

After listening to the interview task recordings, the participants' answers to sociolinguistic questions regarding L2 attitudes toward /θ/, the Castilian dialect, and Spanish culture reflect that positive L2 linguistic attitudes towards the sound in question and the Castilian dialect do not result in a higher production rate of interdentals for Group A. However, attitudes do affect production rate for Group B because participants that express a more positive attitude present a higher production rate of interdentals. This is an important difference to report because although participants in Group A had a positive attitude and opinion overall, this did not affect how many interdentals they produced in their own L2 speech. On the other hand, 75% of Group B participants began L2 learning with exposure to the Castilian Spanish dialect, so familiarity with the dialect and sound in particular could contribute to more positive attitudes, therefore resulting in higher production rates.

One additional finding from the interview data suggests that, upon self-reflection, participants in Group A stated that they would use /θ/ more frequently specifically with the word *gracias* ("thank you"). This could be due to the high frequency use of this word in everyday conversations and interactions, but in Group B we do not see the same pattern, as use of the target sound is more frequent and consistent in their speech that there is no particular word or situation in which they would specifically produce the interdental sound because they would overall use this sound with any potential context in which it occurs.

4.0 Conclusions and Discussion

Taking into consideration all of the results from each of the three tasks separately and then considering the tasks together with group differences, we can draw conclusions that refer back to each of the three research questions posed.

4.1 Are there any linguistic factors that promote the production of /θ/?

Upon analysis of the three tasks, we conclude that there are a few linguistic factors that promote the production of the voiceless interdental fricative, including when it appears in a stressed syllable, in word-medial position, and in the onset of the syllable. This does not necessarily mean that /θ/ appears in these three conditions simultaneously, but rather separately because we see in the reading task that there were more interdentals produced specifically in the onset of an unstressed syllable. Orthography plays a role depending on the task, because while in the reading task /θ/ occurred more with the grapheme <ci>, in the other two tasks <z> was the grapheme which elicited a higher production rate of /θ/. The

result of graphemic context follows what Ringer-Hilfinger (2012) found, i.e. that /θ/ occurs more with <ci>. For the other two tasks in which <z> elicited the highest production rates, this corroborates the findings of Knouse (2012).

One hypothesis as to why the interdental is found more in a stressed syllable is that since stress places phonetic emphasis on a syllable, when /θ/ occurs in a stressed syllable it is more prominent to a learner's ear, so they will produce the sound more frequently in positions where it is most salient to them. This hypothesis can also apply to the finding that there are more interdentals produced in the onset of the syllable, since the onset is the first sound that the speaker hears in a new syllable and it might be perceptually more salient to them than coda position. Looking at the effect of word-medial position, across all tasks /θ/ is realized the most in this position, which aligns with the results from Knouse (2012). We may find more interdentals in word-medial position due to surrounding sounds and the mouth shape required to articulate said sound in conjunction with producing an interdental sound. In the future it would be interesting to look further into linguistic environment by analyzing the surrounding sounds and looking for patterns in production next to a high, low, front, or back vowel.

Also, In Figure 18 we found cases of over-production of /θ/ with the grapheme <s> by participants in Group A specifically during the interview task. Producing an interdental with <s> is an example of over-production in this case because a native speaker of Castilian Spanish would not produce /θ/ in this context, as the graphemic distribution of /θ/ in this dialect shown in Table 1 indicates. One hypothesis is that after encountering this sound for the first time during a study abroad program in Spain, the university students recognize that /θ/ is a dialectal feature that surrounds them in their daily life abroad, but they do not quite

know the rules of production, since /θ/ creates a phonological contrast with <s> in Castilian Spanish. Solely from my own experiences as a second language learner, I have observed that when L2 language learners are exposed to a new dialectal feature, lexical item, or syntactic structure, they tend to overproduce this new piece of information where it is not normally found as a way to test out and experiment with this new feature.

Furthermore, we found that there were more interdentals produced during the interview task than in the other tasks, which is unexpected and goes against the findings of Ringer-Hilfinger (2012) and George (2014), who concluded that /θ/ was produced more during the word list and read-aloud tasks than with spontaneous speech. We would expect that production rate of interdentals would be higher during the reading task, which elicited more monitored speech, because the sentences were unrelated and read in isolation. This caused the speaker to read carefully and focus more on their pronunciation and possibly on use of the interdental sound. However, what we do find is that there were more interdentals produced during the interview task, which elicited more spontaneous speech. One explanation is that because the sociolinguistic interview was conducted by a native speaker of Castilian Spanish, the participants were trying to mirror their speech. During the reading and photo description tasks the interviewer was also a native speaker of the dialect, but there was far less interaction between the speaker and participant and less opportunity to mirror or adapt to the native speaker's pronunciation. For future studies it would be interesting to have another L2 speaker of Spanish or an L1 Spanish speaker who speaks a different dialect conduct the interview to see if production data changes in any way. It is possible that when participants interact with these different interlocutors their production rate of /θ/ may change.

4.2 How does the amount of time spent in Spain affect the acquisition process of /θ/?

As expected, we found that the amount of time one has spent in Spain does affect the production rate of /θ/. Members of Group A, who had spent less time in Spain, did not produce the interdental sound nearly as much as Group B, who had been living in Spain for nine months or longer. This is expected because more time spent in a country means more exposure to the target language, in this case to the Castilian dialect of Spanish, but contradicts Geeslin & Gudmestad (2008), who concluded that living abroad was not relevant for the incorporation of /θ/ in a speaker's phonological inventory and that there is no minimum length of stay necessary for acquisition (Geeslin & Gudmestad, 2008).

4.3 What role do L2 sociolinguistic attitudes toward the target sound and target culture in general play in the acquisition process?

In regard to L2 linguistic attitudes, we conclude that they are not significant for Group A, but we do find a link for Group B between the production of/ θ/ and positive L2 linguistic attitudes. Even though most participants in Group A had a positive attitude towards the sound and Spanish culture, they did not adopt this sound and use it in their L2 speech (Geeslin & Gudmestad, 2008; Ringer-Hilfinger, 2012). We conclude that for Group B, motivation and L2 linguistic identity contribute to this link between positive attitude and production rate because the participants in Group B had willingly chosen to live in Spain. Because humans are social creatures and try to fit in with their surroundings, when one chooses to move to a country that is not their homeland a person may try and adopt aspects of the new culture in order to fit in and truly make the new country feel like home. An important aspect of cultural adaptation is language, so by adopting a unique dialectal feature such as the Castilian Spanish /θ/, the participants are showing their L2 linguistic

identity aligns with Spanish culture. Here we see a link between a learner's ethnic identity and an emerging L2 identity (Trofimovich & Turuseva, 2015). It comes as no surprise that language and ethnic identity are inextricably linked. Barring a handful of exceptions (e.g., Northover & Donnelly, 1996), ethnic groups typically consider language as a salient identity symbol (e.g., Edwards, 2009; Fought, 2006). Participants in Group A are in a slightly different situation. Although probably many of them chose to study abroad specifically in Spain, for a majority of these students this is their first systematic exposure to Spanish culture and the Castilian dialect in a. systematic manner. American students learning Spanish as an L2 are usually exposed to and learn a Latin American dialect of Spanish in school, so they may have already formed an L2 linguistic identity with another dialect/ culture. Even if they do identify with Spanish culture and have positive attitudes about /θ/, it may be a question of exposure and length of time spent in Spain, which relates to our conclusions regarding the second research question.

4.4 Conclusion

The goal of this study was to further contribute to work done on L2 acquisition of phonetics and phonology specifically dealing with the voiceless interdental fricative /θ/ and L2 identity and attitudes, and we have reached conclusions that both corroborate and disprove previous studies. This opens the door for future studies, as there is still more work to be done in the study of L2 acquisition of dialectal variation, a line of research that has implications both in pedagogy and in the fields of SLA and sociolinguistics. First, continuing to research and explore this topic allows for application in approaches to teaching Spanish as a second language by including exposure to a variety of dialectal

features in the curriculum and exploring the link between L2 linguistic attitudes and identity further. Additionally, it is important to continue exploring linguistic factors that contribute to acquisition of sounds and consider sociolinguistic aspects as well, including L2 identity and attitudes towards a particular dialect or sound. In future studies, it would be of interest to delve deeper into the questions of orthographic and linguistic contexts that condition the use of /θ/, since previous studies have mixed results regarding graphemic context. I would like to expand this project by including more participants who have spent a variety of time in Spain and look deeper into linguistic contexts that condition the voiceless interdental fricative such as the specific characteristics of sounds that surround /θ/. Additionally, as previously mentioned this study could be carried out with either an L1 English speaker or L1 Spanish speaker of a different dialect conducting the sociolinguistic interview to see if this affects production rate of the interdental sound.

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6.0 Appendix

6.1 Full list of questions from the sociolinguistic interview

Tercera tarea: entrevista

¿Puedes contarme de su niñez en los EE. UU.?
-Sobre sus hermanos, vida diaria

¿Era un requisito aprender otro idioma en la escuela?

¿Cuándo aprendiste español?

¿Hablas otro idioma?
- ¿Cuál?

¿Cuándo te mudaste a España?
- ¿Por qué?

¿Qué es tu profesión?

¿Cuántos años tenías cuando empezaste[2] estudiar español?[2]

¿Hablas otro idioma? ¿Cuál?

¿Por qué escogiste estudiar español?

¿Quieres continuar?

¿Qué es tu especialización en la universidad?

¿Qué te gusta hacer en tu tiempo libre?

¿Cómo ha sido diferente tu vida diaria en España comparada con los EE. UU.?

¿Qué son algunas cosas que te hacen feliz?

¿Puedes contarme del último viaje que hiciste?

¿Tienes una película favorita?

[2] In the first section of the interview the questions changed depending on participant. Group A participants were asked questions relating to their studies and time at university, which are shown in italics. Group B participants were asked about their professions.

¿Has estudiado la dialectología de español en la escuela y/o la universidad?

¿Cuándo hablas español, prestas atención a tu pronunciación?

- ¿Cuándo escuchas a una persona de España hablar, a ti te gusta cómo suena su acento?

- ¿Te das cuenta de algunas diferencias entre el español que se habla en España comparado con Latinoamérica?

- ¿Qué son tus opiniones del acento español?

La theta:

- ¿Cómo te suena?
  - ¿te gusta o no? ¿Por qué?

- ¿Las personas que utilizan la theta en su habla te parecen cultos? ¿Graciosos? Tienes opiniones?
  - ¿Por qué?

- ¿Te gusta la cultura y la gente española?

- ¿Cuáles aspectos de la cultura española te gustan? ¿Por qué?

- ¿Intentas hablar español utilizando las características del castellano en tu propio habla?
  - ¿Cuáles?
  - ¿Por qué?

- ¿Haces un esfuerzo consciente a usar la theta en tu habla?
  -Si sí, ¿por qué?

- ¿Hay una situación en que usarías la theta o no la usarías?
  -Con gente específica, en un lugar específico, ¿etc.?